

SECRET

REPORT NO.  

25X1A

25X

COUNTRY Poland

DATE DISTR. 29 Jan. 1954

SUBJECT Electrical and Electronics Instruments

NO. OF PAGES 3

DATE OF INFORMATION  REFERENCES:  

25X1A

PLACE ACQUIRED  25X1C  
25X1A

THIS IS UNEVALUATED INFORMATION

25X1X

SOURCE

1. Source never saw or heard of a Ballantine type of vacuum tube voltmeter. The only work being done on sintered coil cores is by the Technical Institute of Gliwice which has made a few cores for experimental purposes. Taut suspension, spotlight-type galvanometers were obtained from the Austrian firm Norma. Current sensitivities ran as high as 10-9 or 10-10 amp/mm, and were obtained through the conventional optical magnification design. Suspended coil, D'Arsonval galvanometers were unobtainable and the few which were in use at institutes and universities had been procured many years ago from Germany and the United States. Some conventional current and voltage instruments were obtained from the AT and RFT firms in East Germany, from Norma in Austria, from the Orion firm in Hungary, and the Metra firm in Czechoslovakia. The Czechoslovak instruments were generally of very good quality, the Hungarian ones very crude and poor, and the others of average quality.

25X1A

2. The inductances  , which were made by the PPAE for the T-11 factory, were to be used as plate chokes in a small transmitter operating in the two to seven mc/s range. Source knows nothing of the details or use of this transmitter. In the same report, mention is made of some 50 resistance thermometers which the PPAE constructed for use in grain elevators in Poland. These had the sensitive element made of 0.2 mm. Cu wire, and the indicating instrument in the bridge assembly was a differential type of microammeter or galvanometer. The standard cells mentioned were made by the Technical Institute in Gliwice and were of the Weston unsaturated type.

---SECRET---

SECRET

-2-

3. All recording instruments were obtained from the AT firm in East Germany. They were 500 w. instruments, ink recording, and with a current range from 3 mA to 6 A full scale, and 6 v. to 600 v. full scale. No fluxmeters were seen, but some were certainly located at various universities and institutes. Multi or poly range test instruments were obtained from Siemens, Norma, and AT. The instruments utilized a Cu-CuO rectifier for the AC circuits, and had a basic indicating movement of 1 mA sensitivity. The few more sensitive instruments which were available were obtained from England (firm unknown); some of them were of 50 uA full-scale sensitivity. No thermocouple, high frequency, transfer instruments were available. The PPAE made all its own vacuum tube voltmeters, which utilized the RCA Volt Ohmest bridge circuit, and which had a DC resistance of 12 megohms and an AC impedance of three megohms. The PPAE had no strictly high frequency measuring instruments. They manufactured decade type potentiometers, with bifilar windings for frequencies up to 10,000 cps and for input voltages up to 300 v. The input resistance was 10,000 ohms.
4. All the D'Arsonval pivoted type electrical measuring instruments manufactured in Poland are made at the A-3 firm in Wlochy near Warsaw [redacted] The highest accuracy instruments made by this firm were of 0.5% accuracy, and had a mirror scale. The basic meter movement was of 1 mA sensitivity. All jeweled bearings were procured from an unknown Swiss firm or firms, and were of some synthetic material, presumably sapphire. The magnetic pole pieces were made at the Baildon Steel Works in Katowice, and great difficulty was experienced by this firm in producing properly aged magnets. This was due primarily to the inability of securing proper materials. The output of the A-3 plant was always inadequate for the demand. 25X1A
5. Many material difficulties existed. The PPAE laboratory could obtain no metalized resistors. They had adequate stocks of wire-wound resistors but none larger than one megohm. Most of their resistors and condensers were obtained from East Germany and Norma. A few were obtained from Sweden but were of very poor quality. The East German source was an RFT firm, and near the end of the period covered [redacted] these were no longer procurable. They obtained adequate stocks of high resistance wire from Sweden, and low temperature coefficient of resistance wire from the USSR. They obtained selenium rectifiers from East Germany, but they were of very poor quality. Dr. GROSZKOWSKI of the Technical Institute of Warsaw, made a few transistors, but Source knows nothing of their characteristics. 25X1X
6. Certain instruments were obtained from the USSR. [redacted] large electrodynamic type of standard ammeter, 0 to 5 ampere range, as well as a similar type of voltmeter, of 0 to 7.5, 15, 30, and 60 v. range. In this latter instrument there was a 40% variation in the full-scale readings of the various ranges. In both instruments, there was an excessive amount of pivot friction, amounting to better than one-half of a graduation movement of the needle, upon gentle tapping. The Russians apparently never heard of coil balancing, since errors due to this lack were prominent. [redacted] electronic oscilloscope with a 15 cm. screen, and for use of up to 2 mc/s with a very great horizontal sweep extension. [redacted] string type oscillograph which was fairly good, and suspects that it actually came from East Germany. The laboratory had three bridges for current transformer measurements, which were very good, and again, [redacted] they actually may have been manufactured in East Germany. They had an impedance bridge, Marconi type, which had a one per cent stated accuracy but which was actually some three to five per cent. This instrument was of good design and construction. 25X1 25X1

SECRET

SECRET

-3-

7. For calibration purposes, the PPAE relied on the PIT, (Industrial Institute of Telecommunications, Warsaw). This institute had a selection of "standard" Weston Med 5 and equivalent make instruments which they secured in 1947-1948 from Weston and Norma. This institute had no way of calibrating their "standard" instruments by the usual methods utilizing a potentiometer, standard cell and standard resistances. The Institute had a Kelvin double bridge of Norma manufacture for low resistance measurements. The PPAE simply took one of their best instruments over to the PIT and had it calibrated against their so-called "standard" instruments. They then used it as their working standard. This method was not too satisfactory for obvious reasons.

SECRET